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PERKINS COIE LLP/MSFT  
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SEATTLE, WA 98111-1247

EXAMINER
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LAI, ANDREW

ART UNIT	PAPER NUMBER
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2616

MAIL DATE	DELIVERY MODE
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08/02/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/776,489

Applicant(s)

RAGHAV ET AL.

Examiner

Andrew Lai

Art Unit

2616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 01 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Wilcock et al (US 2002/0,073,208, Wilcock hereinafter).

Wilcock discloses “A contact center, and methods of operating a contact center” ([0001] lines 1-2) comprising the following features.

- **Regarding independent claims 1, 8 and 14**

**Regarding claim 1**, *a system* (fig. 3 and see “a service system” recited [0001] lines 2-3) *for controlling and monitoring communication devices used in multi-way communications* (see “a service system is used to establish communication over a data network between customers and customer service representatives” recited [0001] lines 3-6), *the system comprising:*

*a first communication device* (fig. 3 “endpoint system 1”) *operable for communicating with a second communication device* (fig. 3 “endpoint system 2”, noting that the “endpoint systems” 1 and 2 are in communication with each other via “service 26” as shown in the fig.);

*a controller unit (fig. 3 “communication session manager 14”, “CSM” hereinafter, with “leg controller 20”, “LC” hereinafter) in communication with said first communication device (fig. 3 depicting “LC 20” in “CSM 14” communicating with “LC 20” in “endpoint system 1”), wherein said control unit is adapted to provide control data to said first communication device (see “the pair of controllers exchange ‘leg messages’ that carry a variety of data, the most important of which is the media description of the session transport which the endpoint system uses to set up media channels” recited [0074] 8-12);*

*a monitoring unit (refer to fig. 3 “LC 20” and see “The leg controller 20 ... monitor the connection state of the entity” recited [0073] lines 8-12) in communication with said first communication device (fig. 3 depicting “LC 20” in “CMS 14” communicating with “LC 20” in “endpoint system 1”), wherein said monitoring unit is adapted to provide inquiry data to said first communication device and is adapted to receive status data from said first communication device (refer to fig. 3 and see the two-way communication between “LC 20” in “CMS 14” and “LC 20” in “endpoint system 1” each sending “(connection state)” data to the other, for which see also “The state of connectivity of the endpoint system is also reported via the use of leg messages” recited [0074] lines 12-14);*

*an entity replica storage unit (see “state machine functionality” recited [0073] line 9) in communication with said monitoring unit (“LC or leg controller”), wherein said entity replica storage unit is adapted to receive said status data from said monitoring unit, store said status data as replica data, and provide said replica data to said monitoring*

*unit* (see “The leg controllers 20 provide the signaling functionality and state machine functionality for inviting an endpoint system into a session transport and subsequently change and monitor the connection state of the entity” recited [0073] lines 8-12, noting, firstly, it is well known in the art that a “state machine” in call processing stores instantaneous states of a call, which a call processor relies upon to make various decisions about the call and can be overwritten by the call processor depending on call state changes; and secondly, the *entity replica* is disclosed in present application as “the data stored in the *entity replica* storage unit 318 represents the exact and current state of the communication device 118, 128 being monitored”, equivalent to call states tracked by a state machine) (for a more general definition of “state machine”, see e.g. [http://searchsmb.techtarget.com/sDefinition/0,,sid44\\_gci214244,00.html](http://searchsmb.techtarget.com/sDefinition/0,,sid44_gci214244,00.html) as accessed July 25, 2007, “**state machine** DEFINITION – In general, a state machine is any device that stores the status of something at a given time and can operate on input to change the status and/or cause an action or output to take place for any given change.”); *and a user interface* (fig. 9 which “illustrates a customer service (CSR) graphical user interface” recited [0021] lines 1-2) *in communication with said controller unit and said monitoring unit* (see “fig. 9 shows an example CSR desktop GUI 80 with a call-management component 82 that can be used by the CSR to receive incoming calls and manage calls that they are already dealing with” recited p13 right col. lines 1-4), *wherein said user interface is adapted to provide user data to said controller unit and said monitoring unit* (it is well known in the art that in a call center operators input customer data via certain user interfaces, see also “Additional information may be available from

Art Unit: 2616

a personal profile associated with the customer (held, for example in database 39 shown in figs. 6 and 7), the profile having been constructed from previous interactions with the call centre and/or provided by the customer through use of a form" recited p23 right col. lines 5-10, noting that such "form" will have to be entered through an input interface) *and is adapted to receive said replica data from said monitoring unit* (refer to fig. 9 showing an example of said interface wherein illustrated fields includes "Status Answered" associated with "Call ID 45" in the frame of "call-management component 82").

**Regarding claims 8 and 14,**

**Claim 8**, *a method* (see "The present invention relates to a contact center, and a method of operating a contact center" recited [0001] lines 1-2) *for controlling and monitoring communication devices used in multi-way communications* (see "in which a service system is used to establish communication over a data network between customers and customer service representatives" recited [0001] lines 3-6), *the method comprising the steps of...*

**Claim 14**, *a computer-readable medium having computer-executable instructions* (see "using standard techniques such as object-oriented programming (e.g. Java Beans), it is possible for a software automation to interact with a session (and its associated service instance and session transport" recited [0333] 13-17) *for controlling and monitoring communication devices used in multi-way communications* (see "service system is used to establish communication over a data network between customers and

customer service representatives" recited [0001] lines 3-6), *the computer-executable instructions performing steps comprising...*

**Both 8 and 14,**

*modeling a communication device* (refer to fig. 1 and see "The communication session abstraction 11 is modeled in the web interaction system by appropriate data structures and methods (for example, implemented as instances of a communication session) for keeping track of a current session and its participants" recited [0042] lines 8-13) *as a logical representation* (see "the connection-state abstractions exchanged by the leg controllers represent high-level, logical participation in the session transport" recited [0074] line 14 on p4 – line 18 on p5) *and a physical representation* (see "connection details include the address and type of the session transport" recited [0070] lines 4-5), *wherein said logical representation represents said communication device's communication link* ("connection-state abstractions" above) *and wherein said physical representation represents said communication device's physical attributes* ("address and type of the session transport" above);

*associating said logical representation with a first unique identifier* (see "A session transport encompasses one of more media channels" recited [0061] lines 1-2 and "A channel has a unique name within the session transport" recited [0062] lines 2-3) *and associating said physical representation with a second unique identifier* (see "A channel endpoint is an instance of an addressable communication source or destination. A channel endpoint has a unique name within the context of a channel" recited [0063] lines 1-3);

*identifying a plurality of logical representations and a plurality of physical representations within a network of communication devices* (see “a channel is an instance of a multi-party communications path between channel endpoints” recited [0061] lines 2-4);

*determining a plurality of relationships between said plurality of logical representations and said plurality of physical representations* (see “there are three modes for sending data on a channel from a channel endpoint;” recited [0065] and see e.g. “data is sent to all channel endpoints...” [0066], commonly known as one-to-many relation, “data is sent to a specific channel endpoint” [0068], commonly known as point-to-point relation.);

*establishing a device control channel for each of a set of said plurality of physical representations* (refer to fig. 3 depicting “session transport manager 19” having “session transport 15” comprising “channel a” and “channel b” and see “Associate with each communication session is a session transport 15 (fig. 2) which is an abstraction of functionality for actually effecting data communication between endpoint systems 16A,B,C corresponding to the session participants 12A,B,C” recited [0043] lines 1-5,);

*establishing a call control channel for each of a set of said plurality of logical representations* (refer to fig. 3 depicting “communication session manager 14” having “leg controller 20” paired up with “leg controller 20” in, e.g. “endpoint system 1”);

*controlling said set of said plurality of logical representations and said plurality of physical representations via said call control channel and said device control channel* (refer to fig. 3 “communication session manager 14” and see, for *logic representation*,



"the communication session manager 14 is concerned with the high level management and control of sessions" recited [0044] lines 1-3; and refer to "session transport manager 19" and see "the session-transport functionality is concerned with the establishment and maintenance of the required media channels for the session transport that underlies each communication session" recited [0044] 3-6);

*monitoring said set of said plurality of logical representations and said plurality of physical representations* (see "The session manager 14 and the session-transport functionality are kept in step through 'leg controllers' 20 (shown in fig. 3)" recited [0045] lines 8-10, and "The leg controller 20 ... monitor the connection state of the entity" recited [0073] lines 8-12); *and*

*storing a replica of data monitored from said set of said plurality of logical representations and said plurality of physical representation* (see "state machine functionality" recited [0073] line 9 and "The leg controllers 20 provide the signaling functionality and state machine functionality for inviting an endpoint system into a session transport and subsequently change and monitor the connection state of the entity" recited [0073] lines 8-12, noting, firstly, it is well known in the art that a "state machine" in call processing stores instantaneous states of a call, which a call processor relies upon to make various decisions about the call and can be overwritten by the call processor depending on call state changes; and secondly, the *entity replica* per Applicant is "the data stored in the *entity replica* storage unit 318 represents the exact and current state of the communication device 118, 128 being monitored", equivalent to call states tracked by a state machine) (for a more general definition of "state machine",

see e.g. [http://searchsmb.techtarget.com/sDefinition/0,,sid44\\_gci214244,00.html](http://searchsmb.techtarget.com/sDefinition/0,,sid44_gci214244,00.html) as accessed July 25, 2007, “**state machine** DEFINITION – In general, a state machine is any device that stores the status of something at a given time and can operate on input to change the status and/or cause an action or output to take place for any given change.”);

- **Regarding dependent claims**

**Claim 2**, wherein said controller unit is further adapted to receive response data from said first communication device and provide said response data to said user interface (refer to fig. 9, text-chat window 85 depicting an example of responses being shown on the user interface, e.g. “Agent Joe says: Hi, how can I help you? Fred says: Tell me about HP”).

**Claim 3**, wherein said first communication device is adapted to provide and receive session initiation protocol (SIP) data from said controller unit and said monitoring unit (see “Internet protocol (IP) socket and Session Initiation Protocol (SIP) transports are other possible alternative implementation choices [of the invention]” recited [0088] lines 9-11).

**Claim 4**, wherein said first communication device comprises a SIP phone (see “Internet protocol (IP) socket and Session Initiation Protocol (SIP) transports are other possible alternative implementation choices [of the invention]” recited [0088] lines 9-11, which suggests necessarily that SIP devices including SIP phones to be used when SIP transports are implemented.)

**Claim 5**, wherein said first communication device comprises a time division multiplexing (TDM) phone (see “The information contained in the initiation context will to some extent be service specific but will generally involve information grouped in the following data sets.” recited [0126] and “This data set is used to describe the characteristics of the requesting party. Examples are ... telephone number” recited [0127] lines 1-4”, noting that it is well known in the art TDM technology is used for telephony).

**Claims 9 and 15**, wherein the step of associating said logical representation with a first identifier and associating said physical representation with a second identifier comprises the steps of:

associating said logical/physical representation with a phone number if said communication device is a TDM device (see “The information contained in the initiation context will to some extent be service specific but will generally involve information grouped in the following data sets.” recited [0126] and “This data set is used to describe the characteristics of the requesting party. Examples are ... telephone number” recited [0127] lines 1-4”, noting that it is well known in the art TDM technology is used for telephony, for which see, e.g. [http://en.wikipedia.org/wiki/Time-division\\_multiplexing](http://en.wikipedia.org/wiki/Time-division_multiplexing) as accessed July 25, 2007, “**Transmission using Time Division Multiplexing (TDM)** In circuit switched networks such as the Public Switched Telephone Network (PSTN) there exists the need to transmit multiple subscribers’ calls along the same transmission medium. To accomplish this, network designers make use of TDM.” recited on the webpage’s “History” section third paragraph);

*associating said logical/physical representation with an email/fully qualified domain name (FQSN), if said communication device is a SIP device (see "The information contained in the initiation context will to some extent be service specific but will generally involve information grouped in the following data sets:" recited [0126] and "This data set is used to describe the characteristics of the requesting party. Examples are ... e-mail address" recited [0127] lines 1-4", noting that "Internet protocol (IP) socket and Session Initiation Protocol (SIP) transports are other possible alternative implementation choices [of the invention]" recited [0088] lines 9-11, and it is well known in the art that e-mail addresses contain domain name per SIP protocol).*

**Claims 10 and 16**, *the method of claim 9, further comprising the step of using said device control channel to connect to said physical representation, if said communication device is a TDM device with more than one communication line (refer to fig. 3 and see "session-transport factory functionality 18 of the session-transport manager 19 is responsible for creating instances of a session-transport object used to represent and permit the set up of each session transport" recited [0060] lines 1-4).*

**Claims 11 and 17**, *wherein determining a plurality of logical representations and a plurality of physical representations comprises searching a network directory for a listing of communication devices within a network (refer to fig. 6 and see "a session initiation instance associated with the page and customer then accesses customer profile database 39 to extract customer data" recited [0316] lines 1-3).*

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilcock (US 2002/0073208, Wilcock hereinafter) in view of Wengrovitz et al (US 2003/0023730, Wengrovitz hereinafter)

Wilcock discloses the claimed limitations as shown above in paragraph 2.

Wilcock further discloses the following features:

**Claim 6**, *a front end SIP unit (fig. 3 "service front-end 27") in communication with said first communication device (fig. 3 "endpoint system 1"), said controller unit, and said monitoring unit (fig. 3 "communication session manager 14") (noting that Wilcock also discloses using "SIP" as a communication protocol, said "service front-end 27" unit will be necessarily a SIP unit or otherwise SIP protocol will be violated), which also shows wherein said front end SIP unit is further adapted to receive data from said controller unit and said monitoring unit, provide said data to said first communication device, receive data from said first communication device and provide said data to said controller unit and said monitoring unit.*

Wilcock does not disclose the following features:

**Claim 6**, wherein said front end SIP unit is adapted to convert a first SIP data into a first computer-telephony-integration (CTI) data and convert a second CTI data into a second SIP data;

wherein said front end SIP unit receives SIP data from controller and sends CTI data to communication device and receive CTI data from communication device and sends SIP data to controller.

**Claim 7**, wherein said first communication device is a SIP enabled PBX phone.

Wengrovitz discloses "a system for conducting multimedia SIP sessions via multiple hosts, such as a PC and a telephone" (Abstract lines 1-2) using, refer to fig. 5, "SIP-enabled PBX" having an "emulation client" and a "VoIP conversion stack" comprising the following features:

*Claim 6*, wherein said front end SIP unit is adapted to convert a first SIP data into a first computer-telephony-integration (CTI) data and convert a second CTI data into a second SIP data;

wherein said front end SIP unit receives SIP data from controller and sends CTI data to communication device and receive CTI data from communication device and sends SIP data to controller.

(see “the emulation client 70 converts received SIP message to PBX messages, such as for example CST, CTI, H.323, or other PBX signaling events” recited [0049] lines 4-6, noting that it would have been obvious to one skilled in the art that reversed conversion is also necessary for smooth communication between, see fig. 5, “telephone stack 80”, “SIP stack 76” and “VoIP conversion stack 68”).

**Claim 7**, *wherein said first communication device is a SIP enabled PBX phone* (see fig. 5 “SIP-enabled PBX 66”)

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Wilcock by adding the SIP/CTI conversion method and SIP-enabled PBX of Wengrovitz to Wilcock in order to “provides reliable SIP phone connections while providing an improved display of data, video, and/or graphics” as pointed out by Wengrovitz ([0008] lines 2-4).

5. Claims 12,18 and 13,19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilcock (US 2002/0073208, Wilcock hereinafter) in view of Roach (Network Working Group Request for Comments: 3265 Updates: 2543, June 2002: Session Initiation Protocol (SIP) – Specific Event Notification).

Wilcock discloses claimed limitations in paragraph 2 above. Wilcock further discloses the following features:

**Regarding claims 12 and 18**, *wherein establishing a device control channel comprises:*

*sending an invitation message to a second communication device from said first communication device (see “Adding identified participant to the session – this results in an invitation being passed to the identified participant system” recited [0053] lines 1-3);*

*receiving an accepted response by said first communication device from said second communication device (see “if the invitation is accepted (as notified to the session through the corresponding leg controller)” recited p3 right col. lines 2-4);*

*sending a connected message from said first communication device to said second communication device in response to receiving said accepted response (see “if the invitation is accepted ... a ‘Connected’ event is produced” recited p3 right col. lines 4-5, noting that it is well known in the art that if a called party in a call is connected, a connected message will necessarily be passed to the party)*

(noting that the above said three messages, invitation, accepted, connected are functionally the same as corresponding SIP INVITE, OK and ACK messages. Since Wilcock also discloses, in general terms, using “SIP” protocol for messaging in his system as cited above in paragraph for claim 9, it would have been obvious to one skilled in the art that above invitation, accepted, and connected message be converted to their counterparts in SIP when “SIP” protocol is employed system-wide in Wilcock).

**Regarding claims 13 and 19, wherein establishing a call control channel comprises:**

*sending an option message to said second communication device from said first communication device (see “The information contained in the initiation context will to some extent be service specific but will generally involve information grouped in the*



following data sets:" recited [0126] and, as one of the messages, "Communication option. This data set describes the preferred communication mechanism of the requesting party" recited [0131] lines 1-3)

*receiving an accepted response by said first communication device from said second communication device (see "if the invitation is accepted (as notified to the session through the corresponding leg controller) a "Connected" event is produced" recited p3 right col. lines 2-4)*

(noting that the above said two messages are functionally the same as corresponding SIP OPTION and SIP OK messages. Since Wilcock also discloses, in general terms, using "SIP" protocol for messaging in his system as cited above in paragraph for claim 9, it would have been obvious to one skilled in the art that above option message and accepted message be converted to SIP compliant messaging when "SIP" is employed system-wise in Wilcock).

Wilcock does not expressly teach the following features:

**Claims 12, 18 and 13, 19,**

*sending a SIP SUBSCRIBE message to said second communication device from said first communication device.*

*receiving a SIP OK response by said first communication device from said second communication device; and*

*sending a SIP NOTIFY message to said second communication device from said first communication device.*

Roach discloses “an extension to the Session Initiation Protocol (SIP)” (Abstract lines 1-2) comprising cited messaging sequences (see [page 3] for “A typical flow of messages would be:

Subscriber	Notifier
-----SUBSCRIBE----->	Request state subscription
<----- 200 -----	Acknowledge subscription
<-----NOTIFY-----	Return current state information”

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Wilcock by adding the SIP messaging sequence of Roach in order to provide a fully SIP compliant system that, as Roach points out has “the ability to request asynchronous notification of events” ([page 2] “Introduction” line 1) which has been proven “useful in many types of SIP services for which cooperation between end-nodes is required” ([page] 2 “Introduction” lines 2-3).

### ***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 6,167,433 discloses shared multi-user communication system that allows a group of users to explore, navigate, manipulate and examine application data in a multi-dimensional synthetic environment.

US 6,373,930 teaches a method and system for monitoring telecommunications traffic wherein a switch sends query message to controller for establishing control.

US 2002/0073150 provides a method for associating parties with communication sessions.

US 2002/0118675 discloses apparatus and method for computer telephone integration in packet switched telephone networks using SIP and CTI.

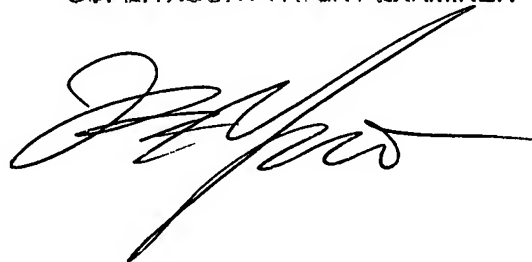
7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Lai whose telephone number is 571-272-9741. The examiner can normally be reached on M-F 7:30-5:00 EST, Off alternative Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kwang Yao can be reached on 571-272-3182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

**KWANG BIN YAO**  
**SUPERVISORY PATENT EXAMINER**

AL

A handwritten signature in black ink, appearing to read 'Kwang Bin Yao', is written over the printed name and title.